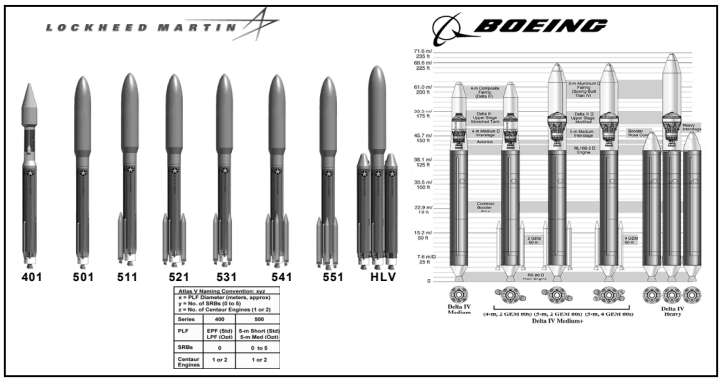
EVOLVED EXPENDABLE LAUNCH VEHICLE (EELV)



The Evolved Expendable Launch Vehicle (EELV) program will provide launch services for government satellite launch requirements currently served by Delta II, Atlas II, Titan II, and Titan IV. The EELV will be DoD's only medium, intermediate, and heavy payload space launch capability after current heritage inventories have been exhausted. The transition from current launch systems begins in FY02. EELV is expected to provide launch services through 2020.

The EELV system includes launch vehicles, infrastructure, support systems, and interfaces. Payload interfaces, launch pads, and infrastructure will be standardized so all configurations of each contractor's EELV family can be launched from the same pad, and so payloads can be interchanged between vehicles in the same class (i.e., medium, intermediate, or heavy). The EELV program will maintain current mass-to-orbit capability while increasing launch rate and decreasing costs. The EELV program is designed to reduce the cost of space launch by at least 25 percent compared with existing systems. Potential savings will be generated through the commercial launch market and shared development by government and commercial customers.

The EELV program uses a streamlined development approach to build a launch services capability. DoD will acquire launch services, while production and launch operations responsibilities remain with the contractor. The government will maintain an ongoing competition between two contractors rather than down-select to one. The two contractors are Boeing and Lockheed Martin. Boeing's EELV family of launch vehicles is designated the Delta IV, and Lockheed Martin's family of launch vehicles is designated the Atlas V. The contractors share development costs with the government to satisfy both DoD/civil launch requirements and commercial launch needs.

BACKGROUND INFORMATION

The EELV program is a contracted launch service. Under this concept, launch service contractors have total system performance responsibility and retain ownership of all EELV flight hardware and launch pad structure. Launch pad real property and other on-base facilities required for operations are leased to the contractors. The EELV acquisition strategy uses government insight into contractor designs, processes, and operations to meet operational requirements. Insight is an operational risk management approach requiring minimum governmental involvement into contractor processes and operations.

The 1998 EELV Test and Evaluation Master Plan (TEMP), which is currently outdated and in need of revision, describes a test strategy that relies almost exclusively on combined developmental/ operational testing. Due to the current acquisition strategy, there are no dedicated test events. The test strategy includes extensive use of models and simulations to predict individual sub-system and total system performance. Despite the ostensibly commercial nature of the program, the government needs to evaluate system performance, interoperability, standardization, and the ability of each launch system to support launch requirements using only two national launch ranges. There is an Operational Assessment (OA) currently in progress, and Initial Operational Test and Evaluation (IOT&E) is planned to begin in July 2002.

TEST & EVALUATION ACTIVITY

Boeing and Lockheed Martin continued conducting qualification testing at the component and sub-system level for their respective families of launch vehicles with government insight provided by the EELV System Program Office (SPO). The SPO has made very little of this data available to the DoD test community, citing a lack of contractual requirements for formal reporting of the results and the attendant difficulties of assembling products suitable for external distribution.

DOT&E has not had the opportunity to observe any EELV test activities first-hand, but has visited production facilities and launch facilities for Delta IV and Atlas V. DOT&E participated in periodic, SPO-conducted, government-only reviews of the entire program as well as integration activities. Although only limited data was available at these reviews, DOT&E was able to determine the key issues and areas of concern for the program. DOT&E also participated in Test Integrated Process Team meetings, with the goal of establishing a process for updating the TEMP and ensuring critical documentation and data are available for independent review and analysis.

TEST & EVALUATION ASSESSMENT

Based on DOT&E's participation in the periodic program reviews and limited insight into contractor-conducted test activities, there do not appear to be any insurmountable problem areas that would preclude starting Delta IV and Atlas V System Development Testing with pathfinder vehicles in December 2001 or conducting the first two commercial launches in May 2002. There is, however, critical documentation that needs to be evaluated by DOT&E prior to the first government payload launch on Delta IV, now scheduled for July 2002. Most important are the Post Flight Analysis Plan (PFAP) and the TEMP. The PFAP has not yet been released from the SPO for outside review, and the TEMP, as stated above, is in need of revision. The OA will support Air Force Space Command's launch readiness review for the first government payload launch. DOT&E will be better able to assess the readiness for the first government launch after observing pathfinder processing, independently reviewing the data, and after reviewing the documentation relevant to the first launch.